DIETARY MANAGEMENT OF CANINE CHRONIC ENTEROPATHY

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NUTRITIONAL APPROACH TO CHRONIC ENTEROPATHY

Gastrointestinal (GI) signs are considered chronic when clinical signs persist for more than 3 weeks or are intermittently present for more than 3 weeks. A nutritional plan is recommended as a first line therapy in dogs with chronic enteropathy (CE). Along with an appropriate diagnostic plan to rule out extra-intestinal, infectious, or other causes (i.e. neoplasia, intussusception, etc.) of clinical signs, localization of the major clinical problem (i.e. small versus large versus mixed bowel diarrhea) can help a clinician determine the most appropriate diet selection. Although the diet plan may vary based on the primary problem, an underlying condition may not always be identified. The most common types of CE can be classified based on their response to therapy: food responsive (including both food intolerance and hypersensitivity), antibiotic responsive, or immunosuppressant (steroid) responsive. Food responsive enteropathies (FRE) are most commonly reported with response rates from approximately 50-66%. A retrospective of long-term outcomes in dogs with CE reported 64.5% food responsive, 16.3% antibiotic responsive, and 19.2% steroid responsive.

Therapeutic GI diets can be divided into three main categories: highly digestible, novel/hydrolyzed protein, and fiber enhanced. Further, some of these diets may be low in fat which can also benefit patients with CE. Dietary strategies, particularly in patients with inflammatory bowel disease (IBD), can include the following: global modification (switching to a different diet all together), optimizing assimilation (feeding a reduced fat, reduced fiber, highly digestible diet), antigenic modification (hydrolyzed/novel protein diets), or immunomodulation (omega-3 fatty acids, prebiotic fibers).

HIGHLY DIGESTIBLE DIETS

Digestibility is defined as the percentage of a food stuff taken into the digestive tract that is absorbed into the body. The goal of a highly digestible diet is to maximize nutrient absorption and minimize stool production. Additionally, a highly digestible diet may decrease the volume of food required to meet energy requirement. Although the terminology “highly digestible” is not clearly defined, products with a protein digestibility of ≥ 87% and fat and carbohydrate digestibility ≥ 90% may be considered highly digestible. Feeding a highly digestible diet can be beneficial for patients with CE as malabsorption often occurs. Increased digestibility can reduce osmotic diarrhea and production of intestinal gas. Some dogs may respond to improved diet digestibility alone without antigenic modification. Response rates in the veterinary literature to this feeding strategy are low for dogs with small bowel CE. Mandigers et al. reported a 17% response rate over 3 years in dogs fed a therapeutic highly digestible intestinal diet. For dogs with primarily large bowel diarrhea, feeding a highly digestible diet can reduce the amount of ingesta passed into the colon. A home prepared cottage cheese and white rice diet successfully managed 85% of dogs with idiopathic chronic colitis with 85% of the responders transitioned onto one of two highly digestible therapeutic diets.

LOW FAT DIETS
Low fat diets can be found in all categories of GI diets, however most therapeutic GI low fat diets are also highly digestible. While there is no standard definition for “low fat” diets for dogs, the author typically regards diets containing ≤ 25% metabolizable energy (ME) as low fat. Canine diets containing ≤ 20% ME fat are considered ultra-low fat. Fat reduction doesn’t necessarily have to be absolute: it may also be relative to what the animal is currently consuming. Feeding a low fat diet is a priority for many patients with protein losing enteropathy (PLE) to improve hypoproteinemia by decreasing lymphatic flow, lacteal dilation and pressure. Inflammation in the small intestines often leads to lymphatic obstruction and dilation of lacteals.

Dietary fat restriction is efficacious in treating dogs with intestinal lymphangectasia particularly those unresponsive to prednisone treatment or with recurrent clinical signs and hypoalbuminemia when prednisone is tapered. A home prepared diet can be formulated to contain a lower fat content than diets available commercially using novel or non-novel protein and carbohydrate ingredients. Consultation with a board-certified veterinary nutritionists or person with similar training is recommended for patients consuming a home prepared diet long term to ensure the diet is complete and balanced.

NOVEL PROTEIN & HYDROLYZED PROTEIN DIETS

Novel or hydrolyzed protein diets are typically used in patients with CE to avoid food antigens that may lead to an immune response, lessen clinical signs, and prevent relapse. Most of these diets are also considered highly digestible. A novel carbohydrate is typically recommended, as carbohydrate ingredient sources contain varying amounts of protein. In clinical practice, the author has had some successful cases on limited ingredient diets that were not necessarily novel for the patient. At this time, the diagnosis of adverse food reaction can only be made through a food elimination trial with challenge. Salivary allergen-specific IgA tests are not recommended as validation studies are not available to determine their efficacy. Serum allergen-specific IgE tests are unreliable with one study reporting a 15.4% positive predictive value.

In dogs with FRE, 55% were on an elimination diet, 44% on a hydrolyzed protein diet, and 1% on a home cooked diet with no significant difference in outcome between dogs on an elimination diet or hydrolyzed protein diet. In another study evaluating long term efficacy of a hydrolyzed protein diet, 88% of dogs with small bowel CE on both a hydrolyzed protein or 142 highly digestible diet responded favorably in the first 3 months, however long term control was significantly better in the hydrolyzed protein group at 6-12 months and 3 years later. No prospective studies comparing the response to a novel protein diet versus hydrolyzed protein diet are currently available in the dogs. Patients with PLE secondary to IBD may benefit from both a low fat and novel/hydrolyzed protein diet, although it is often difficult to distinguish which dietary characteristic will provide the best clinical outcome. The fat content of many therapeutic novel/hydrolyzed protein diets may be too high for patients with severe PLE, therefore the priority is to initially provide a low fat diet.

Therapeutic hydrolyzed protein diets may be advantageous for clinicians given the wide variety of ingredients available in over-the-counter (OTC) pet foods complicating the selection of a novel protein diet. Further, cross contamination of food antigens not listed on the label of OTC diets renders these diets inappropriate for food elimination trials and increases the potential number of antigen exposures for a pet. This cross contamination likely occurs at some point during the manufacturing process of the diet. Three of 4 OTC venison dry dog foods tested positive for beef or soy antigens with no beef or soy products in the ingredient lists. Another study found soy protein in 3 of 4 OTC diets claiming to contain no soy. Interestingly this same study found soy protein (>2.5ppm) in 4 of 7 therapeutic diets for food elimination trials with 2 containing a soy product on the label (soy protein hydrolysate). Soy-sensitized dogs have been shown to tolerate hydrolyzed soy protein with no clinical response after an oral challenge making hydrolyzed soy protein diets still a good option. When choosing a novel protein diet, one must have a thorough knowledge of patient dietary protein exposure and that the diet chosen only contains the protein listed. Even with home prepared diets, cross contamination can occur at the level of the butcher, supplier, or in the home of the owner preparing the food. Therefore careful selection of protein source, supplier, and preparation should be emphasized to pet owners preparing food at home.

FIBER-ENHANCED DIETS

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Dogs with chronic idiopathic large bowel diarrhea and limited success to other dietary strategies had clinical improvement when started on a highly digestible diet with added soluble fiber (i.e. psyllium husk). In another study, 63% of dogs with chronic idiopathic large bowel diarrhea improved on two different fiber enhanced therapeutic diets allowing for discontinuation of medical treatment. Fiber-enhanced diets can often be considered a first line therapy for dogs with chronic large bowel diarrhea. Antigenic modification should be considered in dogs that fail a fiber-enhanced diet alone. Fiber is a poor source of energy, therefore its inclusion in pet food will decrease the energy density and the digestibility of the diet. Fiber is expressed on pet food labels as a maximum percentage of crude fiber which primarily reflects the percentage of cellulose (insoluble fiber) in the diet. Total dietary fiber more accurately reflects the fiber content of a pet food by including both soluble and insoluble fibers except for certain types of fiber such as oligosaccharides. Fibers are classified based on their solubility (increased water-binding capacity to make a viscous solution), fermentation (ability of colonic microbes to produce short chain fatty acids), and prebiotic ability to support the growth and activity of health-promoting bacteria in the GI tract. Prebiotic fibers, such as inulin, fructooligosaccharides, mannoooligosaccharides, and resistant starch, are selectively fermented by commensal bacteria in the GI tract to produce short chain fatty acids that have beneficial effects on colonic health. Dietary fiber has also been shown to alter the microbiome of both dogs.

OTHER NUTRITIONAL CONSIDERATIONS

The prevalence of hypocobalaminemia in dogs with CE varies with one study reporting 55%. Supplementation to correct this deficiency is recommended as deficiency is associated with poorer outcomes with CE and may improve response to therapy. Historically, treatment protocols for parenteral administration of cobalamin have been recommended. More recent studies have demonstrated that oral cobalamin supplementation is effective in increasing serum cobalamin concentration in dogs with CE and hypocobalaminemia. Oral when compared to parental cobalamin supplementation has also been shown to be efficacious in increasing serum cobalamin concentrations in dogs with CE.

Hypovitaminosis D (25(OH)D) is negatively associated with inflammation in the GI tract of dogs with CE. Concentrations of serum 25 hydroxyvitamin D at the time of diagnosis of CE in dogs was negatively associated with outcome. Low serum 25(OH)D was also associated with poor outcome in dogs with PLE. While an association between vitamin D status and outcome has been established, studies are not yet available investigating vitamin D supplementation and outcomes in dogs with CE.

REFERENCES


